WHAT IS CLAIMED IS:

1. An oligomeric para-phenylene compound having the formula:

$$R^1\text{-}(Ar^i)_n\text{-}R^2$$

wherein

the subscript n is an integer of from 5 to 15;

the superscript i is an integer of from 1 to n and denotes the position downstream from R^1;

each Ar is a substituted or unsubstituted aryl group;

R^1 and R^2 are each substituents that increase the solubility of the para-phenylene compound in nonpolar organic solvents relative to the solubility of the corresponding compound wherein R^1 and R^2 are hydrogen;

with the proviso that the Ar^i groups are linked together in a 1,4-paraphenylene manner.

2. A compound of claim **1**, wherein n is an integer of from 5 to 9.

3. A compound of claim **1**, wherein said Ar^i groups are independently selected from unsubstituted phenylene and phenylene having from 1 to 4 fluoro substituents.

4. A compound of claim **1**, wherein said Ar^i groups are independently selected from unsubstituted phenylene, phenylene having from 1 to 4 fluoro substituents; and substituted or unsubstituted fused polycyclic aryl with the proviso that any fused polycyclic aryl groups are linked in the compound in a manner that maintains a coplanar orientation relative to the adjacent Ar^i groups.

5. A compound of claim **4**, wherein said fused polycyclic aryl groups are selected from the group consisting of 2,6-naphthylene, 2,7-phenanthrylene, 2,6-anthrylene, and 2,6-carbazolylidene.

6. A compound of claim **1**, wherein the subscript n is 7 and Ar^3 and Ar^5 are substituted or unsubstituted 2,6-naphthylene.

7. A compound of claim **1**, wherein the subscript n is 7 and Ar^4 bears two substituted or unsubstituted phenyl ring substituents other than the remaining Ar^i groups.

8. A compound of claim **1**, wherein R^1 and R^2 are each independently substituents having the formula:

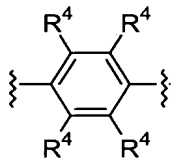
$$R^3\text{-}(Ar^j)_m\text{-}$$

wherein

the subscript m is an integer of from 1 to 5;

each Ar^j is selected from the group consisting of

a) a 1,4-phenylene group having the formula:



wherein each R^4 is a member independently selected from the group consisting of H, substituted or unsubstituted (C_1-C_{12})alkyl, substituted or unsubstituted (C_1-C_{12})alkoxy, substituted or unsubstituted (C_1-C_{12})alkylamino, substituted or unsubstituted (C_1-C_{12})alkylthio, substituted or unsubstituted di(C_1-C_{12})alkylamino, substituted or unsubstituted arylamino, substituted or unsubstituted diarylamino and halogen, with the proviso that at least two of the four R^4 substituents are independently selected from substituted or unsubstituted (C_1-C_{12})alkyl and substituted or unsubstituted (C_1-C_{12})alkoxy, and

b) an aryl biradical selected from the group consisting of 1,4-naphthylene, 1,4-anthrylene, 9,10-anthrylene, 5,6,7,8-tetrahydronaphth-1,4-ylene, 9,9',10,10'-tetra(C_1-C_{12})alkyl-9,10-dihydroanthr-1,4-ylene, 9,9'10,10'-tetraaryl-9,10-dihydroanthr-1,4-ylene, 9,9'10,10'-tetra(C_1-C_{12})alkyl-9,10-dihydroanthr-2,6-ylene, 9,9'10,10'-tetraaryl-9,10-dihydroanthr-1,4-ylene; and

R^3 is selected from the group consisting of H, substituted or unsubstituted (C_1-C_{12})alkyl, substituted or unsubstituted (C_1-C_{12})alkoxy, substituted or unsubstituted (C_1-C_{12})alkylamino, substituted or unsubstituted (C_1-C_{12})alkylthio, substituted or unsubstituted di(C_1-C_{12})alkylamino, substituted or unsubstituted arylamino, substituted or unsubstituted diarylamino and halogen.

9. A compound of claim **8**, wherein m is an integer of from 1 to 3.

10. A polymer of the formula:

$$R^{11}\text{-}(Q^i)_p\text{-}R^{12}$$

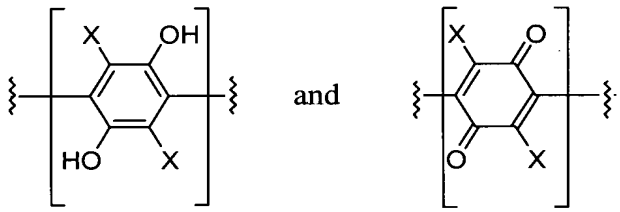
wherein

each R^{11} and R^{12} is independently selected from the group consisting of H, substituted or unsubstituted (C_1-C_{12})alkyl, substituted or unsubstituted (C_1-C_{12})alkoxy, substituted or unsubstituted (C_1-C_{12})alkylamino, substituted or unsubstituted (C_1-C_{12})alkylthio, substituted or unsubstituted di(C_1-C_{12})alkylamino, substituted or unsubstituted arylamino, substituted or unsubstituted diarylamino and halogen;

the subscript p is an integer of from 5 to 200;

the superscript i is an integer of from 1 to p and indicates the position downstream from R^1 of each Q;

each Q^i is a benzoquinone or hydroquinone subunit selected from the formulae:



wherein

each X is independently selected from the group consisting of H, substituted or unsubstituted (C_1-C_{12})alkyl, substituted or unsubstituted (C_1-C_{12})alkoxy, substituted or unsubstituted (C_1-C_{12})alkylamino, substituted or unsubstituted (C_1-C_{12})alkylthio, substituted or unsubstituted di(C_1-C_{12})alkylamino, substituted or unsubstituted arylamino, substituted or unsubstituted diarylamino and halogen.

11. A polymer of claim **10**, wherein said hydroquinone and benzoquinone subunits are present in about a 50:50 ratio.

12. A polymer of claim **10**, wherein said hydroquinone and benzoquinone subunits alternate in said polymer so that no two hydroquinone subunits are adjacent and no two benzoquinone subunits are adjacent.

13. A polymer of claim **10**, wherein two adjacent hydroquinone subunits alternate with one benzoquinone subunit.

14. A polymer of claim **10**, wherein two adjacent benzoquinone subunits alternate with one hydroquinone subunit.

15. A block copolymer having the formula:

$$R^{21}\text{-}(Q^j)_k\text{-}R^{22}$$

wherein

each R^{21} and R^{22} is independently selected from the group consisting of H, substituted or unsubstituted (C_1-C_{12})alkyl, substituted or unsubstituted (C_1-C_{12})alkoxy, substituted or unsubstituted (C_1-C_{12})alkylamino, substituted or unsubstituted (C_1-C_{12})alkylthio, substituted or unsubstituted di(C_1-C_{12})alkylamino, substituted or unsubstituted arylamino, substituted or unsubstituted diarylamino and halogen;

the subscript k is an integer of from 2 to 20;

the superscript j is an integer of from 1 to k and indicates the position downstream from R^{21} of each Q;

each Q^j is a para-phenylene block subunit or a solubility-enhancing subunit, said subunits selected from the formulae:

$$\text{-}(Ar^i)_n\text{-} \quad \text{and} \quad \text{-}(Ar^j)_m\text{-}$$

wherein

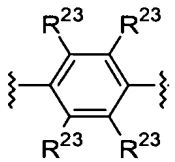
the subscript n is an integer of from 5 to 15;

the subscript m is an integer of from 1 to 5:

each Ar^i is a substituted or unsubstituted aryl group linked in a manner that maintains a coplanar orientation relative to adjacent Ar^i groups;

each Ar^j is selected from the group consisting of

a) a 1,4-phenylene group having the formula:



wherein each R^{23} is a member independently selected from the group consisting of H, substituted or unsubstituted (C_1-C_{12})alkyl, substituted or unsubstituted (C_1-C_{12})alkoxy, substituted or unsubstituted (C_1-C_{12})alkylamino, substituted or unsubstituted (C_1-C_{12})alkylthio, substituted or unsubstituted di(C_1-C_{12})alkylamino, substituted or unsubstituted arylamino, substituted or

unsubstituted diarylamino and halogen, with the proviso that at least two of the four R^{23} substituents are independently selected from substituted or unsubstituted (C_1-C_{12})alkyl and substituted or unsubstituted (C_1-C_{12})alkoxy, and

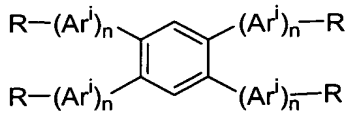
b) an aryl biradical selected from the group consisting of 1,4-naphthylene, 1,4-anthrylene, 9,10-anthrylene, 5,6,7,8-tetrahydronaphth-1,4-ylene, 9,9',10,10'-tetra(C_1-C_{12})alkyl-9,10-dihydroanthr-1,4-ylene, 9,9'10,10'-tetraaryl-9,10-dihydroanthr-1,4-ylene, 9,9'10,10'-tetra(C_1-C_{12})alkyl-9,10-dihydroanthr-2,6-ylene, 9,9'10,10'-tetraaryl-9,10-dihydroanthr-1,4-ylene.

16. A block copolymer of claim **15**, wherein Q^1, Q^3 and Q^5 are block para-phenylene subunits and Q^2, Q^4 and Q^6 are solubility enhancing subunits.

17. A block copolymer of claim **15**, wherein Q^1, Q^3, Q^5 and Q^7 are solubility enhancing subunits and Q^2, Q^4 and Q^6 are block para-phenylene subunits.

18. A block copolymer of claim **15**, wherein each Ar^i is selected from the group consisting of unsubstituted 1,4-phenylene and fluoro-substituted 1,4-phenylene .

19. A branched polymeric aromatic compound having the formula:



wherein

each R is a member selected from the group consisting of substituted or unsubstituted (C_1-C_{12})alkyl, substituted or unsubstituted (C_1-C_{12})alkoxy, phenyl and halogen;

the subscript n is an integer of from 3 to 8;

Ar is a substituted or unsubstituted aryl group and i is an integer denoting its position away from the central tetrasubstituted phenyl ring, and each Ar^i can be the same or different from Ar^i at any other position;

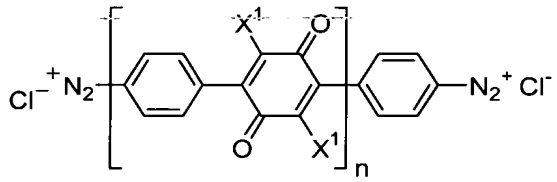
with the provisos that the Ar^i groups are linked together in a 1,4-paraphenylene manner.

20. A branched polymeric aromatic compound of claim **19**, wherein the subscript n is 3; each Ar^1 and each Ar^3 is 1,4-phenylene; and each Ar^2 is a substituted or unsubstituted 1,4-phenylene.

21. A method of preparing a polymeric OLED material on a solid support, said method comprising:

(a) contacting a solid support-bound aryl diazonium salt with 3,6-dichloroquinone under conditions sufficient to form a solid support-bound aryl quinone derivative; and

(b) contacting said solid support-bound aryl quinone derivative with a diazonium compound having the formula:

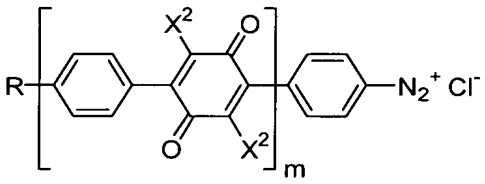


wherein each X^1 is a blocking group and the subscript n is an integer of from 0 to 4;

under conditions sufficient to form an intermediate poly OLED material;

(c) repeating steps (a) and (b) from 2 to 70 times; and

(d) terminating the polymeric OLED material by contacting the product of step (c) with a terminating diazonium compound having the formula:



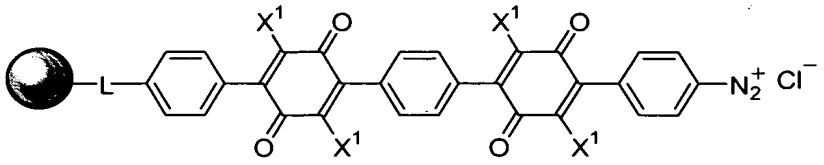
wherein

each X^2 is a blocking group,

R is a member selected from the group consisting of H, substituted or unsubstituted $(C_1\text{-}C_{12})$alkyl, substituted or unsubstituted $(C_1\text{-}C_{12})$alkoxy, substituted or unsubstituted $(C_1\text{-}C_{12})$alkylamino, substituted or unsubstituted $(C_1\text{-}C_{12})$alkylthio, substituted or unsubstituted di$(C_1\text{-}C_{12})$alkylamino, substituted or unsubstituted arylamino and substituted or unsubstituted diarylamino; and

m is an integer of from 0 to 3.

22. A method in accordance with claim **21**, wherein an intermediate poly OLED material is produced having the formula:



wherein

L is a linking group;

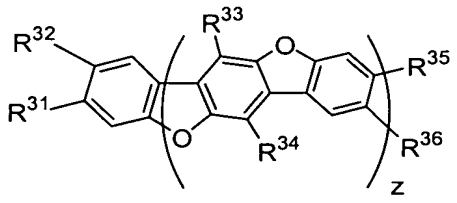
the shaded sphere is a solid support; and

X^1 is a member selected from the group consisting of halogen, substituted or unsubstituted alkyl, substituted or unsubstituted alkoxy, substituted or unsubstituted alkylamino, substituted or unsubstituted alkylthio, and substituted or unsubstituted dialkylamino.

23. A method in accordance with claim **21**, wherein said solid support is selected from the group consisting of glass, tin oxide, indium oxide, and mixtures thereof.

24. A solid support-bound poly OLED material formed by the method of claim **21**.

25. A polyfurano ladder oligomer having the formula:



wherein

the subscript z is an integer of from 2 to 7;

each of R^{31}, R^{32}, R^{33}, R^{34}, R^{35}, R^{36} is independently selected from the group consisting of H, substituted or unsubstituted $(C_1\text{-}C_{12})$alkyl, substituted or unsubstituted $(C_1\text{-}C_{12})$alkoxy and halogen.

26. A polyfurano ladder oligomer of claim **25**, wherein R^{32} and R^{35} are each H.

27. A polyfurano ladder oligomer of claim **25**, wherein z is an integer of from 2 to 4; and R^{32} and R^{35} are each H.

28. A method of forming a light emitting polymer, said method comprising exposing an oligomeric para-phenylene compound of claim 1 having attached acrylate ester groups to sufficient ultraviolet light to form a light emitting polymer comprising a plurality of said oligomeric para-phenylene compound covalently attached to each other via ester and ether linkages.

29. A method of forming a light emitting polymer, said method comprising exposing a polyfurano ladder oligomer of claim **25** having attached acrylate ester groups to sufficient ultraviolet light to form a light emitting polymer comprising a plurality of said polyfurano ladder oligomers covalently attached to each other via ester and ether linkages